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CURS, NATHAN M	

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BEFORE THE BOARD OF PATENT APPEALS
AND INTERFERENCES

Ex parte DAVID G. WAY

Appeal 2007-3025
Application 10/041,853
Technology Center 2600

Decided: April 15, 2008

Before ANITA PELLMAN GROSS, MAHSHID D. SAADAT, and JOHN A. JEFFERY, *Administrative Patent Judges*.

GROSS, *Administrative Patent Judge*.

DECISION ON APPEAL

STATEMENT OF THE CASE

Way (Appellant) appeals under 35 U.S.C. § 134 from the Examiner's final rejection of claims 1 through 9 and 11 through 20, which are all of the claims pending in this application. We have jurisdiction under 35 U.S.C. § 6(b).

Appellant's invention relates to selectable dispersion enhancement and dispersion compensation for optical fibers. (Spec. 3-4). Claim 1 is illustrative of the claimed invention, and it reads as follows:

1. A dispersion compensation system comprising:

a dispersion compensation module (DCM) operable to receive optical input and provide optical output having a negative dispersion relative to the optical input; and

a dispersion enhancement module (DEM) adapted to be optically coupled between the DCM and an optical fiber having a positive dispersion, the DEM operably including a plurality of dispersion enhancement fibers and operable to selectively increase the positive dispersion provided by the optical fiber by a selected one of a plurality of amounts and to provide the optical input to the DCM, the optical input having a positive dispersion substantially equal to the positive dispersion of the optical fiber plus the selected one of the amounts of dispersion in the DEM.

The prior art references of record relied upon by the Examiner in rejecting the appealed claims are:

Delavaux	US 5,608,562	Mar. 04, 1997
Keys	US 6,456,773 B1	Sep. 24, 2002 (filed Apr. 17, 2000)
Feinberg	US 2003/0031433 A1	Feb. 13, 2003 (filed Sep. 26, 2001)
Colbourne	US 6,654,564 B1	Nov. 25, 2003 (filed Aug. 07, 2000)

Claims 1 through 9, 11, 13 through 17, 19, and 20 stand rejected under 35 U.S.C. § 103 as being unpatentable over Colbourne in view of Delavaux and Keys.

Claims 12 and 18 stand rejected under 35 U.S.C. § 103 as being unpatentable over Colbourne in view of Delavaux, Keys, and Feinberg.

We refer to the Examiner's Answer (mailed January 5, 2007) and to Appellant's Brief (filed October 10, 2006) and Reply Brief (filed March 5, 2007) for the respective arguments.

SUMMARY OF DECISION

As a consequence of our review, we will affirm the obviousness rejections of claims 1 through 9 and 11 through 20.

OPINION

The Examiner asserts (Ans. 3-4) that Colbourne teaches a dispersion compensation system with both a compensation module and an enhancement module, but do not disclose that the enhancement module includes dispersion enhancement fibers. The Examiner asserts (Ans. 4) that Delavaux discloses variable dispersion compensation using switched dispersion compensation fibers controlled by a controller and that Keys discloses using positive and negative dispersion segments in each dispersion compensation device.

Appellant contends (App. Br. 12-13) that the proposed combination fails to teach all of the claimed limitations. Specifically, Appellant contends (App. Br. 13 and 16-17 and Reply Br. 6-7) that Colbourne teaches away from using dispersion enhancement fibers. Appellant further contends (App. Br. 14-15 and Reply Br. 3 and 7) that Delavaux and Keys teach away from the combination as Delavaux teaches using compensation fibers with a negative dispersion and Keys teaches that compensation fibers are coupled together to provide a net dispersion to offset the dispersion of an optical fiber. Last, Appellant contends (App. Br. 17-18 and Reply Br. 4-6) that the Examiner has provided no motivation to combine the references. The issue before us, therefore, is whether the combination of Colbourne, Delavaux, and Keys would have been obvious, and whether the combination teaches or

suggests using controllable dispersion enhancement fibers in addition to a dispersion compensation module.

Colbourne discloses (col. 10, ll. 20-45) using two tunable filters, opposite in sign, with the total dispersion of the two being either increasing or decreasing. Further, Colbourne discloses (col. 10, l. 67-col. 11, l. 2) that the filters can compensate for the dispersion slope after conventional dispersion compensation. In other words, Colbourne suggests a conventional compensation module and a compensation filter or pair of filters which can have a positive net compensation, or dispersion enhancement. We agree with Appellant, though, that Colbourne appears to teach away from using dispersion compensating fibers for the controllable dispersion enhancement by stating that the fibers cannot compensate for the wavelength dependence of dispersion (see col. 9, ll. 12-15).

However, Delavaux discloses (col. 4, ll. 23-36) a unit formed of dispersion compensating fibers that can compensate for several wavelengths simultaneously. Thus, Delavaux solves the problem posed by Colbourne as to using fibers for dispersion enhancement. Further, Keys discloses (col. 1, ll. 57-63) that proposed dispersion compensating modules include both positive dispersion and negative dispersion compensating fibers, wherein the net dispersion offsets the dispersion associated with an optical fibers. Thus, Keys further supports the combination of an enhancement module with positive dispersion compensating fibers and a compensation module with negative dispersion. Accordingly, the combined teachings and suggestions of the three references do suggest using dispersion enhancement fibers.

We are not persuaded by Appellant's argument that Delavaux and Keys teach away from using dispersion enhancing fibers. Colbourne teaches

dispersion enhancement with positive dispersion. Delavaux teaches that fibers can be used to compensate for dispersion at different wavelengths. Even if Delavaux used only negative dispersion, Delavaux's teachings should be interpreted more broadly as suggesting using fibers for adjustable dispersion. Similarly, Keys is not limited to negative dispersion compensation, as Keys explicitly discloses positive and negative compensation to offset dispersion associated with optical fibers.

As to Appellant's last contention, that there is no motivation to combine the references, the Supreme Court has held that in analyzing the obviousness of combining elements, a court need not find specific teachings, but rather may consider "the background knowledge possessed by a person having ordinary skill in the art" and "the inferences and creative steps that a person of ordinary skill in the art would employ." *See KSR Int'l Co. v. Teleflex Inc.*, 127 S. Ct. 1727, 1740-41 (2007). To be nonobvious, an improvement must be "more than the predictable use of prior art elements according to their established functions," and the basis for an obviousness rejection must include an "articulated reasoning with some rational underpinning to support the legal conclusion of obviousness." *Id.* Here, Colbourne states (col. 9, ll. 12-16) that dispersion compensating fibers may be used to provide a fixed positive or negative dispersion compensation for optical fibers but cannot compensate for wavelength dependence of dispersion. Thus, Colbourne suggests that compensation includes positive dispersion, or enhancement, and that it would be desirable to use controllable fibers for dispersion compensators. Since Delavaux teaches how to control dispersion compensation fibers, and Keys further suggests dispersion compensation fibers may provide either positive or negative

dispersion, the combined teachings of the three references would have suggested an enhancement module of dispersion compensation fibers as well as a compensation module. The combination is no more than the predictable use of prior art elements. Accordingly, we will sustain the obviousness rejection of claims 1 through 9, 11, 13 through 17, 19, and 20 over Colbourne in view of Delavaux and Keys.

Regarding the rejection of claims 12 and 18, the Examiner added Feinberg to the primary combination. However, Appellant's sole argument (App. Br. 18) is that Feinberg fails to cure the alleged deficiency of Colbourne, Delavaux, and Keys. Since we have found no such deficiency, we will sustain the obviousness rejection of claims 12 and 18.

ORDER

The decision of the Examiner rejecting claims 1 through 9 and 11 through 20 under 35 U.S.C. § 103 is affirmed.

No time period for taking any subsequent action in connection with this appeal may be extended under 37 C.F.R. § 1.136(a). *See* 37 C.F.R. § 1.136(a)(1)(iv).

AFFIRMED

gvw

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